

DESCRIPTION OF *EVALLJAPYX LIMPIA*, N. SP. (DIPLURA: JAPYGIDAE)  
FROM THE DAVIS MOUNTAINS OF WESTERN TEXAS

MARK A. MUEGGE

Texas Cooperative Extension, The Texas A&M University System, District VI Extension Center, Airport Road, Fort Stockton, TX 79735, U.S.A. (e-mail: ma-muegge@tamu.edu)

---

*Abstract.*—A new species of Japygidae from the Davis mountain region of western Texas is described and illustrated. *Evalljapyx limpia*, n. sp., represents the first described species within the genus *Evalljapyx* from Texas. Based on the body length and number of antennal segments, this new species is included in the *diversiplura* group. A key is provided to separate *Evalljapyx limpia* from other species within the *diversiplura* group.

*Key Words:* *Evalljapyx limpia*, new species, Diplura, Japygidae

---

The genus *Evalljapyx* Silvestri represents the most diverse assemblage of species within the North American japygid fauna. Members of this genus have been collected from Arizona, California, and Nevada in the United States and several states in Mexico. Members of this genus have also been described from Canada, Guatemala, Costa Rica, Ecuador, Cuba, and Jamaica (Reddell 1983, Paclt 1976, Pagés 1996). Silvestri (1911) erected the genus *Evalljapyx* with *E. sonoranus* Silvestri as the type species. He characterized the genus by plumose or pinnate body setae, apical lamina pectinate, stylus with two setae, cerci asymmetrical, sexual dimorphism of the cerci, and setose lateral frontal sinuses absent.

Adult members of *Evalljapyx* vary considerably in body length and the number of antennal segments. Smith (1959, 1960a, b) noted this and, in a series of publications, described new species of *Evalljapyx* into species groups based primarily on the number of antennal segments. He also noted that smaller species tended to possess fewer antennal segments (Smith 1959). These groups are as follows: *E. sonoranus* group

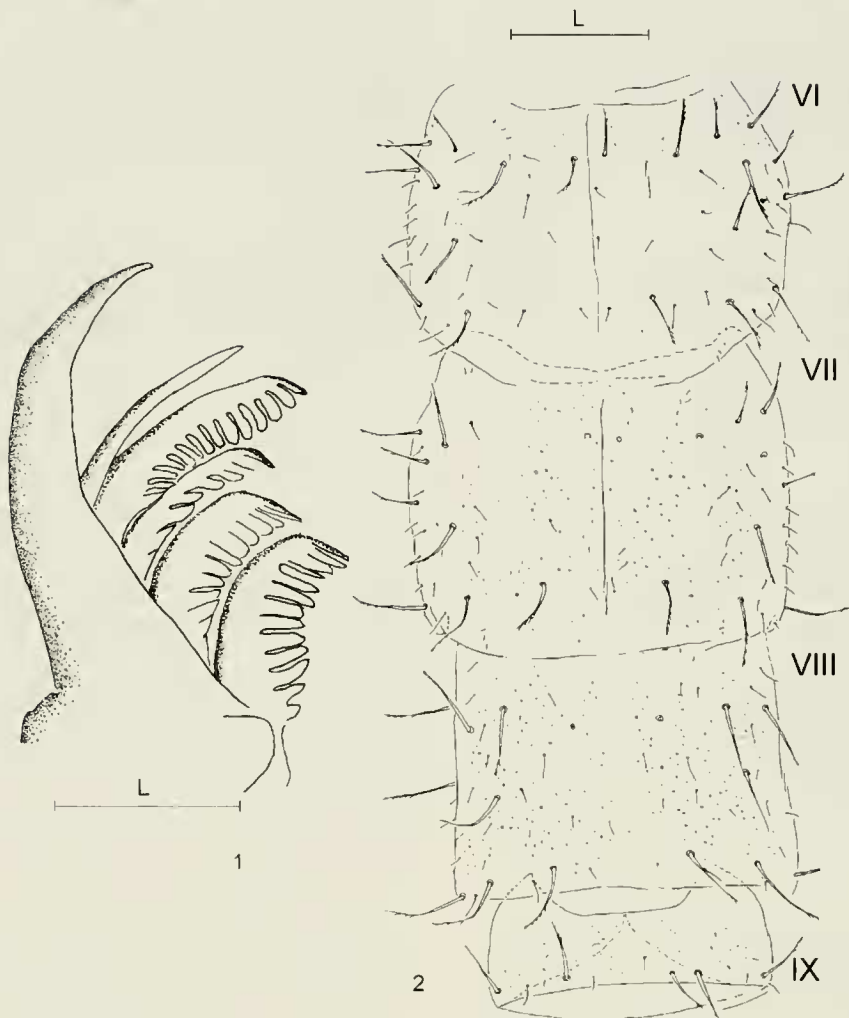
with  $30 \pm 1$  antennal segments, *E. diversipleura* group with 24 antennal segments, and *E. leechi* group with 26 antennal segments. Here I describe a new species of *Evalljapyx* belonging to the *diversiplura* group, and present a key to separate the five species in this group.

*Evalljapyx limpia* Muegge, new species  
(Figs. 1–6)

Male.—Length 7.1 mm. Greatest width at tergite VII, 0.6 mm. Integument unpigmented except progressively more sclerotized tergites VII–X and cerci.

Antenna with 23 segments, segments 1–3 with several scattered setae of various lengths, larger setae generally faintly pinnate, remaining segments with irregular whorls of long and short simple setae. Lateral projection of setae absent; terminal segment of antenna with placoid sensilla in a single whorl of four.

*Head:* Most M plumose. Dorsum with 13+13 macrosetae (M) and 15+16 submacrosetae (m) uniformly distributed; admentum with 8+7M and 6+5m uniformly distributed. Prementum with 19+22 M+m,



Figs. 1-2. *Evalljapyx limpia*. 1, Lacina of male showing falciform 1st lamina. L = 0.05 mm. 2, Chaetotaxy of abdominal tergites VI-IX of male. L = 0.25 mm.

most restricted to apical  $\frac{1}{3}$  of sclerite; postmentum with 2+2M and 6+6m, smaller m restricted medially; submentum 2+2M and 4+5m. Labial palpus conical, slightly longer than wide, with 2+2 long and 2+2 short apical setae, longest 2 times longer than palpus, apex of palpus with sensory cones absent. Maxillary palpus basal segment 1+1m, apical segment 11+11m restricted to apical one-half of segment, longest seta 1.5 times length of segment; galea with 1+1m on lateral margin, thumb of galea slightly sclerotized with 4+4 long and 1+1 short apical sensory cones; lacinia sclerotized and falciform, lamina I falciform (Fig. 1), II-V with 15, 5, 12, 13+15, 8, 11, 15 teeth respectively. Basal spur absent.

**Thorax:** Pronotum 6+6M, and several scattered microsetae, prescutum 1+1 median M, metanotum 7+7M, and several

scattered microsetae, prescutum 1+1 median M, few micro and anteromedian and posterolateral patches of friction setae; mesonotum 9+8M, several microsetae and anteromedian and posterolateral patches of friction setae.

**Legs:** Dorsal apex of pro-, meso-, and metafemora with 2 large plumose setae and 1 simple small seta; pro-, meso-, and metatibiae with 3 ventral subapical calcar setae, longest  $\frac{1}{2}$  length of tarsus; pro-, meso-, metatarsi with 2 ventral rows of robust setae  $\frac{1}{2}$  to  $\frac{2}{3}$  tarsal length, numerous smaller scattered m + microsetae. All segments with numerous variously sized setae, becoming denser apically. Pro-, meso-, and metatarsal empodia  $\frac{1}{3}$  length of pretarsus.

**Abdomen:** Prescutum 1+1M, scutum 6+6 M and 13+9 scattered m + microsetae; tergite II 10+10M, III 8+11M, IV 10+10M, V 10+10 M, VI 10+11M, VII

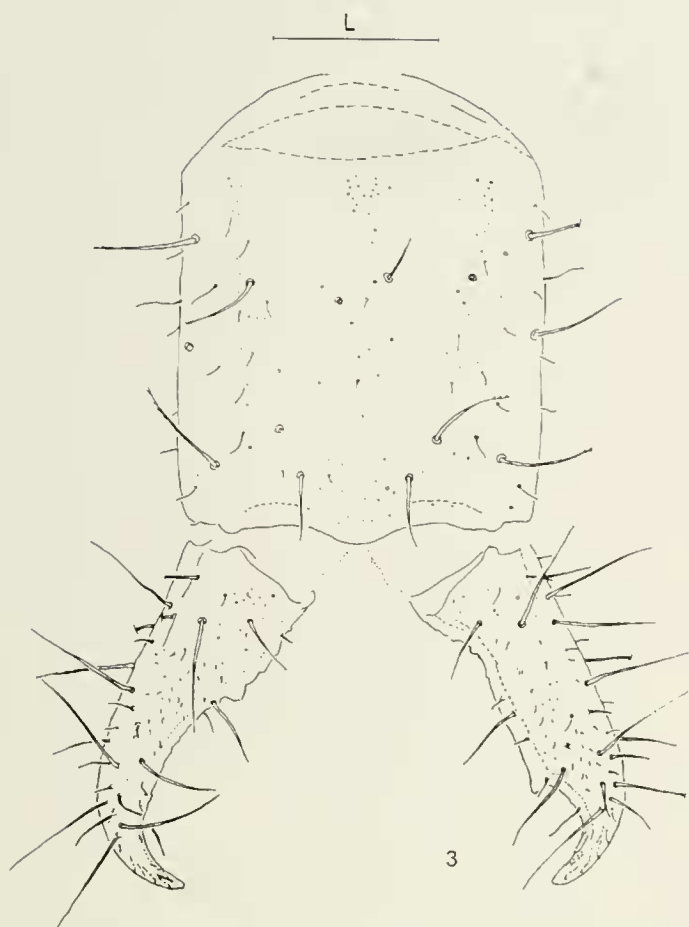


Fig. 3. *Evalljapyx limpia*, tergite X and cerci of male. L = 0.25 mm.

9+10M, VIII 9+9 M, IX posterior margin 3+4 M, and X 6+6 sublateral M and 1+1 medial M (Figs. 2-3). Scattered m+microsetae present on all tergites. Posterolateral margins of tergite VII projected posteriorly into blunt heavily sclerotized points; anteromedian pair of M present on tergites I-VII and subequal in size to other M. Pleurite I glabrous, pleuron 1+1 M and a few scattered m and microsetae; pleurites II-VII 1+1M and 1+1m, pleurae II-VII 2+2M and 1+1m. Tergite IX pleurae meeting in midventral line and with 4+4 M; tergite X as long as wide, sublateral carinae absent, pygidium distinct and rounded (Fig. 3).

Sternum I apotome 5+5 plumose M becoming progressively shorter medially, sternite 18+19 plumose M uniformly distributed, few scattered microsetae. Antecedent setae plumose, 15+15 restricted to posterior  $\frac{1}{4}$  of sclerite, subequal in length to stylus; lateral subcoxal organs occupying nearly entire distance between styli, each with 1

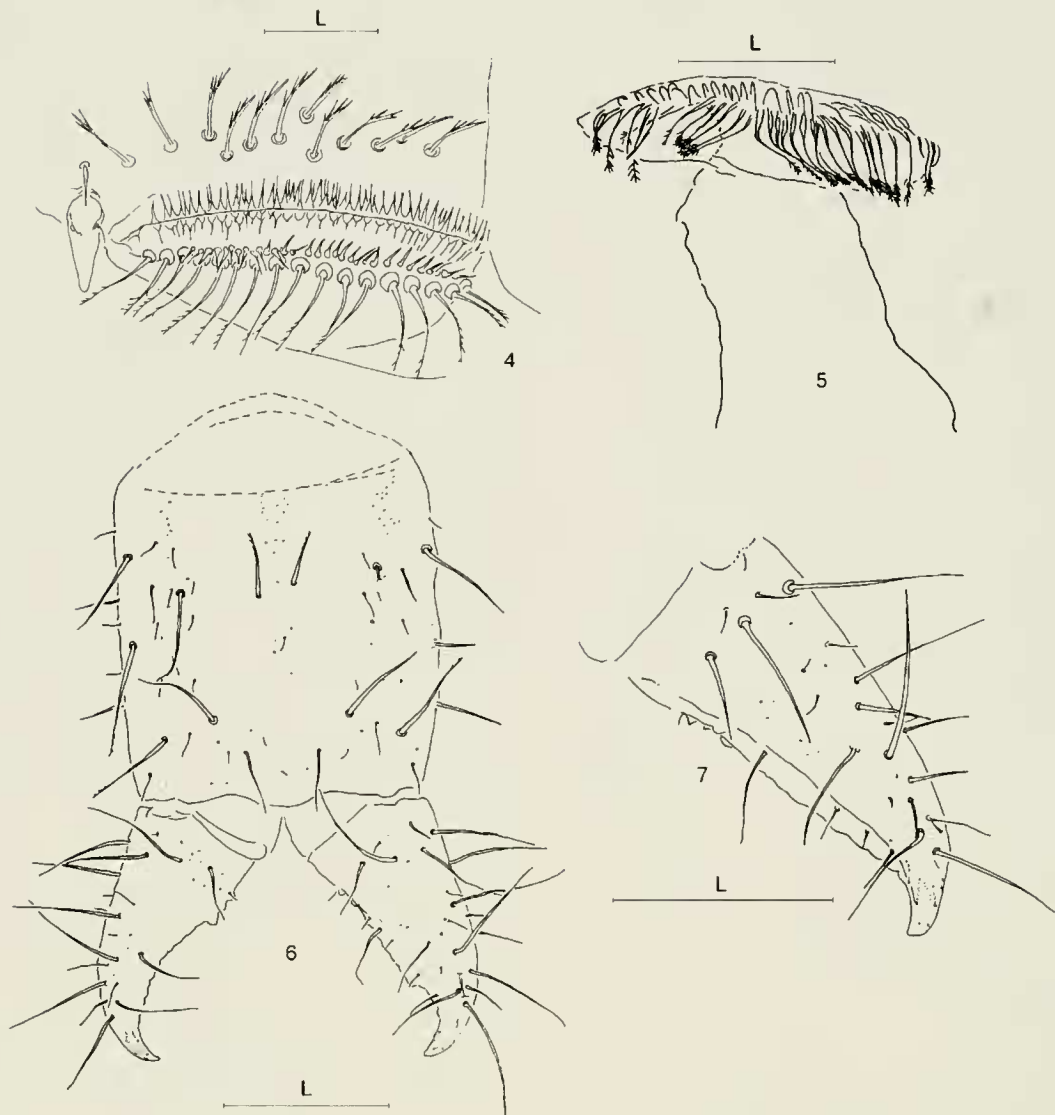
row of plumose sensory setae slightly longer than styli and 4 rows of glandular setae approximately  $\frac{1}{4}$  length of sensory setae; 17+14 hairlike sensory setae set in large setal sockets (Fig. 4); median glandular organ absent. Sterna apotomes II-VI 5+5M, VII 4+4M plumose and progressively smaller medially. Sternite II 17+18M, III 15+14M, IV and V 16+16M, VI 16+17M, VII 15+15M uniformly distributed in four irregular transverse rows, scattered m and microsetae; sternite macrosetae plumose. Sternite VIII 8+8 uniformly distributed plumose M, scattered m and microsetae; sternite X 9+9 uniformly distributed plumose M, scattered m and microsetae. Male sac present, opening at sternite of abdominal sternum III, sac extending nearly to anterior margin of sternum III. Sac with numerous bilaterally plumose setae, setae restricted to distal  $\frac{1}{4}$  of sac (Fig. 5).

*Genitalia:* Genital papillae absent, sensory pegs absent, genital orifice surrounded by scattered long simple setae, setae progressively longer distally.

*Cerci:* Left cercus inner margin with 4 small denticles followed by a large blunt premedian tooth; postmedian margin with 2 small denticles becoming crenulate, ending with distinct hook (Fig. 3). Right cercus inner margin with distinct premedian sinus and biseriate denticles, dorsal row with 3 denticles, ventral row with 4 denticles; postsinus margin with 4 small denticles ending in a toothlike prominence followed by a sharply crescentic hook (Fig. 3).

Female.—Resembling male except: Length, 6.4 mm; width at tergite VII, 0.54 mm; sternite I with 6+7 antecedent setae in one row immediately anterior to LSO, lateral subcoxal organ with 46+48 GS in two irregular rows, SS 13+13 in a single row. Genital orifice oval surrounded with numerous scattered simple setae, setae progressively longer distally, papillary area and sensory pegs absent. Cerci slightly shorter and more robust; left cercus premedian margin uniserrate with 2 denticles, medium premedian tooth, postmedian mar-





Figs. 4–7. 4–6, *Evalljapyx limpia*. 7, *Evalljapyx* sp. 4, Lateral subcoxal organ of male. L = 0.1 mm. 5, Male sac showing bilaterally plumose setae. L = 0.1 mm. 6, Tergite X and cerci of female. L = 0.25 mm. 7, Right cercus of a male *Evalljapyx* spp. L = 0.25 mm.

gin with 2 distinct denticles becoming crenulate. Right cercus premedian margin with distinct sinus and biserrate denticles, dorsal margin smooth, ventral margin with 2 denticles; postsinus margin smooth, ending in a tooth-like prominence followed by a crescentic hook (Fig. 6).

Type material.—Holotype ♂ and allotype ♀ collected by the author from humus beneath a large *Quercus* sp. near Limpia Creek in the Davis Mountains State Park, Jeff Davis County, TX; VI-3-2001; elevation approximately 1524 m. The holotype and allotype are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC.

Etymology.—Spanish *limpia* (“clear or clean”) referring to the proximity of the

collected specimens to Limpia Creek in Davis Mountains State Park.

Remarks.—*Evalljapyx limpia* possesses 23 antennal segments, thus is placed in the *diversipleura* group. Interestingly, contrary to Silvestri’s generic description, three of the known *Evalljapyx* species possess a falciiform apical lamina, including *E. limpia*. Other generic characters hold for *E. limpia*, thus I believe this new species should be placed in the genus *Evalljapyx*; however, I emend the generic description to reflect the condition of this character.

#### KEY TO *EVALLJAPYX* SPECIES IN THE *DIVERSIPLURA* GROUP

1. Right cercus with distinct crescentic hook (Fig. 3); pleurites II–VI 1+1M . . . . . 2

- Right cercus without distinct crecentric hook (Fig. 7); pleurites II-VI 2+2M . . . . . 3
- 2. 23 antennal segments; lamina I falciform; right cercus with distinct premedian sinus; lateral subcoxal organ with 2-4 rows of glandular setae (Fig. 4) . . . . . *E. limpia*, n.sp.
- 24 antennal segments; lamina I pectinate; right cercus without premedian sinus; lateral subcoxal organ with 8 rows of glandular setae . . . . . *E. raneyi* Smith 1959
- 3. Right cercus with distinct postmedian dilation . . . . . *E. helferi* Smith, 1959
- Right cercus without postmedian dilation . . . . . 4
- 4. Tergite X 7+7M; lateral subcoxal organ with 5-6 rows of glandular setae; basal 3 antennal segments with simple setae; tergite VII with 13+13M . . . . . *E. facetus* Smith, 1959
- Tergite X 6+6M; lateral subcoxal organ with 3-4 rows of glandular setae; basal 3 antennal segments with plumose setae; tergite VII with 10+10M . . . . . *E. diversiplura* (Silvestri, 1911)

## ACKNOWLEDGMENTS

I thank W. P. Morrison, J. A. Jackman, and J. Pagés for their critical review of earlier versions of this manuscript.

## LITERATURE CITED

- Paelt, J. 1976. XXI. Diploures et Thysanoures récoltés dans les Iles Galapagos et en Ecuador par N et J. Leleup. Mission Zoologique Belge aux Îles Galapagos et en Ecuador. Volume III, pp 115-134.
- Pagés, J. 1996. Un Evalljapygidae (Diplura) Canadian: *Evalljapyx saundersi* n.sp. Dicellurata Genavensia XXI. Revue Suisse de Zoologie 103(2): 355-367.
- Reddell, J. R. 1983. A checklist and bibliography of the Japygoidea (Insecta: Diplura) of North America, Central America, and the West Indies. Texas Memorial Museum, Pearce-Sellards Series, No. 37, 41 pp.
- Silvestri, F. 1911. Materiali per lo studio dei Tisanuri. XII. Un novo genere e undici specie nove di Japygidae dell'America settentrionale. Bollettino del Laboratoric di Zoologia Generale e Agraria. Portici 5: 72-87.
- Smith, L. M. 1959. Japygidae of North America, 4. New species of *Evalljapyx* with twenty-four antennal segments. Proceedings of the Entomological Society of Washington 61(6): 267-274.
- . 1960a. Japygidae of North America, 5. Species of *Evalljapyx* with  $30 \pm 1$  segments in the antenna (order Diplura). Annals of the Entomological Society of America 53: 137-143.
- . 1960b. Japygidae of North America, 6. New species of *Evalljapyx* with 26 antennal segments. Journal of the Kansas Entomological Society 33(1): 1-7.